

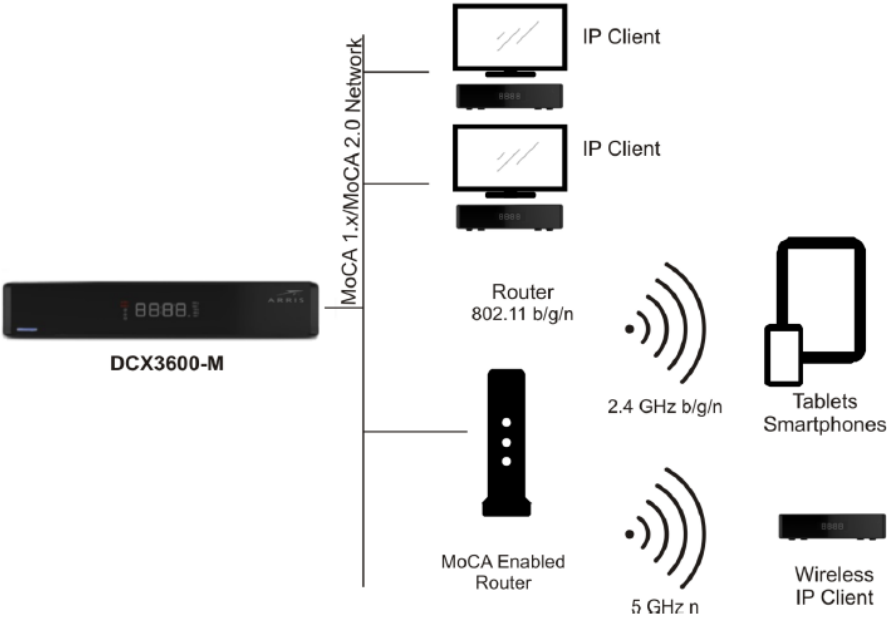
EXHIBIT 8

U.S. Patent No. 9,838,213 (“the ’213 Patent”) Exemplary Infringement Chart

The Accused MoCA Instrumentalities are instrumentalities that Charter deploys to provide a whole-premises DVR network over an on-premises coaxial cable network, with devices operating with data connections compliant with MoCA 1.0, 1.1, and/or 2.0. The Accused MoCA Instrumentalities include the Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220, and substantially similar instrumentalities. Charter literally and/or under the doctrine of equivalents infringes the claims of the ’213 Patent under 35 U.S.C. § 271(a) by using the Accused MoCA Instrumentalities.

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1. A communication method implemented in a Network Coordinator (NC) node of a communication network of a premises, the method comprising:	<p>The Accused Services are provided using at least the Accused MoCA Instrumentalities including gateway devices (including, but not limited to, the Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, and devices that operate in a similar manner), client devices (including, but not limited to, the Charter Arris DCX3200, Charter Arris DCX3220, and devices that operate in a similar manner), and substantially similar instrumentalities. The Accused MoCA Instrumentalities operate to form a communication network of a premises over an on-premises coaxial cable network as described below.</p> <p>The Charter full-premises DVR network constitutes a communication network of a premises as claimed. The Charter full-premises DVR network is a MoCA network created between gateway devices and client devices using the on-premises coaxial cable network. This MoCA network is compliant with MoCA 1.0, 1.1, and/or 2.0.</p> <p>“The MoCA system network model creates a coax network which supports communications between a convergence layer in one MoCA node to the corresponding convergence layer in another MoCA node.” (MoCA 1.1, Section 1.1. <i>See also</i> MoCA 2.0, Section 1.2.2)</p>

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	<p>“The MoCA Network transmits high speed multimedia data over the in-home coaxial cable infrastructure.” (MoCA 1.1, Section 2. <i>See also</i> MoCA 2.0, Section 5)</p> <p>“Network Coordinator (NC) – A MoCA node that performs the following salient functions in a MoCA Network: Beacon generation, MAP generation, admission of new MoCA nodes to the network, privacy key generation and distribution, and LMO scheduling.” (MoCA 1.1, Section 1.2. <i>See also</i> MoCA 2.0, Section 3)</p> <p>Charter utilizes the MoCA standard to provide an on-premises DVR network over an on-premises coaxial cable network as shown below:</p>

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	<p>MoCA Router Connection</p>  <p>Figure 5 - A Typical Mixed MoCA/WiFi Home Network</p>
<p>broadcasting to a plurality of nodes of the network, a request for a guaranteed quality of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node;</p>	<p>The Accused MoCA Instrumentalities operate to broadcast to a plurality of nodes of the network, a request for a guaranteed quality of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that broadcast to a plurality of nodes of the network, a request for a guaranteed quality</p>

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	<p>of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node.</p> <p>“This specification defines L2ME Transactions used for admission control and management of MoCA PQoS Flows. Any L2ME-capable node can start a PQoS Transaction in the MoCA Network. The NC Node is responsible for admitting the PQoS Flow to the MoCA Network by first requesting present resource utilization information from all other Nodes. If there are sufficient resources to admit the flow, the NC Node then guarantees availability of sufficient transmission opportunities to the flow. If there are insufficient resources, the NC Node will deny the requested flow and supply additional information about remaining resources.” (MoCA 1.1, Section 3.17.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The purpose of the Create or Update Flow Transactions is to create a new PQoS Flow or update attributes of an existing PQoS Flow. Example use of Update Flow Transaction includes changing Flow attributes in response to starting/stopping trick mode play and changing Flow attributes in response to changes in available MoCA Network bandwidth. Any Node can attempt to create or update any PQoS Flow.” (MoCA 1.1, Section 3.17.2. <i>See also</i> MoCA 2.0, Section 7.7)</p>

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	<div><pre>sequenceDiagram participant EN as Entry Node participant NC as NC participant ON as Other Nodes EN->>NC: Submit Note over NC: NC requests from all nodes their current PqoS commitment and whether the PqoS Flow can be created or updated as requested NC->>EN: Request ON->>NC: Response(s) Note over EN: Wave 0 Note over NC: Using the responses received, NC accepts or rejects the requested PqoS Flow creation or update NC->>EN: Response NC->>ON: Request ON->>NC: Response(s) Note over EN: Wave 1 Note over NC: NC notifies the Entry node of the result of its create or update PqoS Flow request NC->>EN: Request EN->>NC: Response Note over EN: Wave 2</pre></div> <p>Figure 3-32. Messages Exchanged During Create or Update PqoS Flow Transaction (MoCA 1.1, Figure 3-32. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“To begin the creation or update of a PqoS Flow in the MoCA Network, the Entry Node MUST transmit a Submit L2ME frame (format shown in Section 0) to the NC.” (MoCA 1.1, Section 3.17.2.1. <i>See also</i> MoCA 2.0, Section 7.7)</p>

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	<p><i>See also</i> MoCA 1.1, Table 3-45; MoCA 2.0, Section 7.7.</p> <p>“Wave 0 informs all the Nodes about the proposed PQoS Flow Creation or Update operation, and collects information about current flow allocations from the Nodes.” (MoCA 1.1, Section 3.17.2.2. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The NC Node initiates Wave 0 using a Request L2ME Frame with format as shown in Section 3.15.2.3.2 and based on the Submit shown in Table 3-45.” (MoCA 1.1, Section 3.17.2.2.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“Ingress Node – A MoCA node into which PQoS Flow traffic enters a MoCA Network.” (MoCA 1.1, Section 1.2. <i>See also</i> MoCA 2.0, Section 3)</p> <p>“Egress Node – A MoCA node from which parameterized QoS flow traffic exits a MoCA Network.” (MoCA 1.1, Section 1.2. <i>See also</i> MoCA 2.0, Section 3)</p> <p>“A PQoS Flow can be transmitted from one Ingress Node to either a single Egress Node or to multiple Egress Nodes. Note that PQoS Flows with multiple Egress Nodes are transmitted using the Ingress Node’s GCD PHY Profile. The Egress Node ID MUST be set to 0x3F for a PQoS Flow transmitted using GCD PHY profile.” (MoCA 1.1, Section 3.17.1. <i>See also</i> MoCA 2.0, Section 7.7)</p>
receiving a first response to the request from the source node, wherein the source node is	The Accused MoCA Instrumentalities operate to receive a first response to the request from the source node, wherein the source node is the point of origin for the

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<p>the point of origin for the purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow;</p>	<p>purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that receive a first response to the request from the source node, wherein the source node is the point of origin for the purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow.</p> <p>“In Wave 0, each Node MUST respond to the NC Node with an L2ME Response Frame, indicating the summed up costs of existing PQoS Flows. The Response L2ME Frame for Create PQoS Flow/Update Flow Transaction MUST follow the format specified in Section 3.15.2.3.2.” (MoCA 1.1, Section 3.17.2.2.2. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“Each requested Node MUST calculate the Response L2ME Frame’s payload parameters as follows:</p> <ol style="list-style-type: none"> 1. Calculate the EXISTING_STPS value which is the sum of CoF for all the existing PQoS Flows excluding the new or updated PQoS Flow in which the Node is an Ingress Node. The contribution of each PQoS Flow is CoF and is calculated using Eq. (1) in Section 3.17.2.6. 2. Calculate the EXISTING_TXPS value for all the existing PQoS Flows excluding the new or updated PQoS Flow. It is the sum of the COST_TXPS for each PQoS

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	<p>Flow for which this is the Ingress Node.</p> <p>3. Calculate the COST_STPTX parameter as the CoF of the new or updated PQoS Flow in multiple of SLOT_TIMES/PQoS Flow transmission according to Eq. (1).</p> <p>4. If there are Ingress Node or Egress Node limits on the PQoS Flow throughput, calculates the remaining Node capacity in kilobits/second (REM_NODE_CAPACITY) as defined in Table 3-46.”</p> <p>(MoCA 1.1, Section 3.17.2.2.2. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“Each requested Node MUST issue a RESPONSE_CODE where the list of acceptable values is shown in Table 3-47. If a Node selects multiple RESPONSE_CODES for rejection of a Create/Update Flow request, the decision regarding which RESPONSE_CODE value to include from among all selected RESPONSE_CODES in the WAVE 0 L2ME Response message MUST be the numerically highest RESPONSE_CODE. If a Node is able to fulfill the NC Node request, it MUST issue a RESPONSE_CODE 0x1 or 0x2 as applicable.”</p> <p>(MoCA 1.1, Section 3.17.2.2.2. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p><i>See also</i> MoCA 1.1, Table 3-46, Table 3-47; MoCA 2.0, Section 7.7.</p> <p>“Ingress Node – A MoCA node into which PQoS Flow traffic enters a MoCA Network.”</p> <p>(MoCA 1.1, Section 1.2. <i>See also</i> MoCA 2.0, Section 3)</p>
receiving a second response to the request from the at least one egress node indicating whether the at least one egress node has available resources to support the guaranteed quality of service flow; and	The Accused MoCA Instrumentalities operate to receive a second response to the request from the at least one egress node indicating whether the at least one egress node has available resources to support the guaranteed quality of service flow as described below.

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	<p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that receive a second response to the request from the at least one egress node indicating whether the at least one egress node has available resources to support the guaranteed quality of service flow.</p> <p>“Each requested Node MUST issue a RESPONSE_CODE where the list of acceptable values is shown in Table 3-47. If a Node selects multiple RESPONSE_CODES for rejection of a Create/Update Flow request, the decision regarding which RESPONSE_CODE value to include from among all selected RESPONSE_CODES in the WAVE 0 L2ME Response message MUST be the numerically highest RESPONSE_CODE. If a Node is able to fulfill the NC Node request, it MUST issue a RESPONSE_CODE 0x1 or 0x2 as applicable.” (MoCA 1.1, Section 3.17.2.2.2. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“Egress Node – A MoCA node from which parameterized QoS flow traffic exits a MoCA Network.” (MoCA 1.1, Section 1.2. <i>See also</i> MoCA 2.0, Section 3)</p> <p>“This specification defines L2ME Transactions used for admission control and management of MoCA PQoS Flows. Any L2ME-capable node can start a PQoS Transaction in the MoCA Network. The NC Node is responsible for admitting the PQoS Flow to the MoCA Network by first requesting present resource utilization information from all other Nodes. If there are sufficient resources to admit the flow, the NC Node then guarantees availability of sufficient transmission opportunities to the flow. If there are insufficient resources, the NC Node will deny the requested flow and supply additional information about remaining resources.”</p>

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<p>if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow, then allocating resources for the guaranteed quality of service flow;</p>	<p>(MoCA 1.1, Section 3.17.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>The Accused MoCA Instrumentalities operate to allocate resources for the guaranteed quality of service flow if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that allocate resources for the guaranteed quality of service flow if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow.</p> <p>“In Wave 1, the NC Node MUST inform the Nodes about the decision on the PQoS Flow Creation or Update request. Before the NC Node can send the Request L2ME Frame of Wave 1, it needs to determine the outcome of the Create PQoS Flow or Update PQoS Flow transaction and values of other fields of the Request message.” (MoCA 1.1, Section 3.17.2.3. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The NC Node MUST send the Request L2ME Frame for Wave 1 using the format shown in Section 3.15.2.3.2.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The DECISION field provides the outcome, as determined by the NC, of the Create or Update PQoS Flow request from the Entry Node. Table 3-49 shows meanings for all possible values of this field defined in this MoCA specification.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p>

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	<p>“The NC Node MUST evaluate the following bandwidth-related criteria before permitting a PQoS Flow creation or update:</p> <ol style="list-style-type: none"> 1. Summed up STPS - the sum of EXISTING_STPS and the product of COST_XTPS and COST_STPTX values from all L2ME-capable nodes. 2. Summed up TXPS - the sum of EXISTING_TXPS and COST_TXPS values from all L2ME-capable nodes.” <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The NC Node MUST admit or update the PQoS Flow if all of the following conditions are satisfied:</p> <ol style="list-style-type: none"> 1. The Summed up STPS is less or equal to QOS_STPS (see Table 3-51) 2. The Summed up TXPS is less or equal to QOS_TXPS (see Table 3-51). 3. The Ingress Node has sent RESPONSE_CODE = 0x1 and REM_NODE_CAPACITY greater than or equal to T_PEAK_DATA_RATE. 4. All Egress Nodes have sent RESPONSE_CODE = 0x2 and REM_NODE_CAPACITY greater than or equal to T_PEAK_DATA_RATE. 5. All Egress Nodes have sent RESPONSE_CODE = 0x2 and REM_BURST_SIZE greater than or equal to T_BURST_SIZE.” <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The NC Node MUST send the decision to allow Flow creation or update in a Request L2ME Frame with DECISION = DECISION_SUCCESS to the participating Nodes in Wave 1 to commit the requested resources.”</p> <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“Upon receiving a Request L2ME Frame indicating a successful Create or Update PQoS Flow operation in Wave 1, the Ingress Node and Egress Nodes for the PQoS</p>

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	Flow MUST commit the requested resources.” (MoCA 1.1, Section 3.17.2.3.2. <i>See also</i> MoCA 2.0, Section 7.7)
if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow, then:	<p>The Accused MoCA Instrumentalities operate to determine if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that determine if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow.</p> <p>“The DECISION field provides the outcome, as determined by the NC, of the Create or Update PQoS Flow request from the Entry Node. Table 3-49 shows meanings for all possible values of this field defined in this MoCA specification.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The NC Node MUST evaluate the following bandwidth-related criteria before permitting a PQoS Flow creation or update:</p> <ol style="list-style-type: none"> 1. Summed up STPS - the sum of EXISTING_STPS and the product of COST_XTPS and COST_STPTX values from all L2ME-capable nodes. 2. Summed up TXPS - the sum of EXISTING_TXPS and COST_TXPS values from all L2ME-capable nodes.” <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“From the allowed RESPONSE_CODE values shown in Table 3-47, if any Node returns one of the RESPONSE_CODEs listed in the first column of Table 3-50, then the Request L2ME Frame for Wave 1 MUST contains the corresponding</p>

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	<p>DECISION shown in Table 3-50. If Nodes return more than one RESPONSE_CODE values shown in Table 3-47, then the NC may choose a DECISION value shown in Table 3-50 corresponding to any of the returned RESPONSE_CODE values.”</p> <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“If the rejection of Create or Update request is due to a non-bandwidth related reason listed in Table 3-50, the NC Node MUST send a Request L2ME Frame by using the appropriate value in the DECISION field to the participating Nodes in Wave 1.”</p> <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“If any one of the bandwidth-related criteria fails, then the NC Node MUST calculate the MAX_PEAK_DATA_RATE value in the payload of the Request frame, which is the maximum allowable PQoS Flow T_PEAK_DATA_RATE that would have succeeded given T_PACKET_SIZE.”</p> <p>(MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p><i>See also</i> MoCA 1.1, Table 3-50; MoCA 2.0, Section 7.7.</p>
denying the guaranteed quality of service flow; and	<p>The Accused MoCA Instrumentalities operate to deny the guaranteed quality of service flow as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that deny the guaranteed quality of service flow.</p> <p>“If one or more of the above five conditions are not satisfied, the NC Node MUST</p>

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	<p>deny the Create or Update Flow request.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“If the rejection of Create or Update request is due to a non-bandwidth related reason listed in Table 3-50, the NC Node MUST send a Request L2ME Frame by using the appropriate value in the DECISION field to the participating Nodes in Wave 1.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“In Wave 1, the NC Node MUST inform the Nodes about the decision on the PQoS Flow Creation or Update request. Before the NC Node can send the Request L2ME Frame of Wave 1, it needs to determine the outcome of the Create PQoS Flow or Update PQoS Flow transaction and values of other fields of the Request message.” (MoCA 1.1, Section 3.17.2.3. <i>See also</i> MoCA 2.0, Section 7.7)</p>
<p>if the guaranteed quality of service flow is denied based on bandwidth-related reasons, then determining a maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow, and transmitting a message comprising information describing the maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow.</p>	<p>The Accused MoCA Instrumentalities operate to determine a maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow and transmit a message comprising information describing the maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow if the guaranteed quality of service flow is denied based on bandwidth-related reasons as described below.</p> <p>For example, by virtue of their compliance with MoCA, the Accused MoCA Instrumentalities include circuitry and/or associated software modules that determine a maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow and transmit a message comprising information describing the maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow if the guaranteed quality of service flow is</p>

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	<p>denied based on bandwidth-related reasons.</p> <p>“The NC Node MUST send the Request L2ME Frame for Wave 1 using the format shown in Section 3.15.2.3.2.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“The DECISION field provides the outcome, as determined by the NC, of the Create or Update PQoS Flow request from the Entry Node. Table 3-49 shows meanings for all possible values of this field defined in this MoCA specification.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p> <p>“If any one of the bandwidth-related criteria fails, then the NC Node MUST calculate the MAX_PEAK_DATA_RATE value in the payload of the Request frame, which is the maximum allowable PQoS Flow T_PEAK_DATA_RATE that would have succeeded given T_PACKET_SIZE.” (MoCA 1.1, Section 3.17.2.3.1. <i>See also</i> MoCA 2.0, Section 7.7)</p>